Informal learning in social networks: A study of the Orkut social network

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This paper describes an analytical study which characterises the virtual communities of the Orkut social network, focusing in particular on education, training and technology, in order to understand whether this and other social websites allow the development of informal learning. This empirical study, which is descriptive and exploratory, began with the design and validation of a grid which was later used to analyse the content of a database of 75 communities from the Orkut virtual social network. The main objectives of this study were to characterise these virtual communities in order to know how the dynamics of interaction and knowledge sharing are processed in these virtual spaces, as well as to identify the tasks and the role of the e-moderator. The results show that there are substantial differences between moderated and public communities regarding themes, the types of language used and the forms of communication and collaboration employed. The e-moderator emerges as the key element in fostering virtual communities; however, it is noticeable that e-moderators are not fully aware of the importance of their role, often assuming a more administrative than pedagogical function. Regarding the main objective of this study – to discern whether these environments can be set up as informal spaces for learning - the answer is still inconclusive, although we have found strong evidence to suggest that these environments can be used in order to encourage the process of the in-service training of teachers, which relies on collaboration and sharing knowledge about subjects.

Introduction

Nowadays, virtual social networks are spaces in which people of all ages, races, occupations, socio-economic backgrounds and even religions meet for different purposes: to make friends, to share experiences and knowledge and to keep themselves up to date in a changing, competitive and demanding global world. The formation of social networks as informal spaces for learning throughout life is a recurring theme that has been approached by several authors, including Castells (2000), Lévy (2003), Capra (2002), Franco (2008) and Barberá (2001).

Today, with the spread of the Internet and other digital technologies, there has been a proliferation of these environments (social networks), on existing platforms or even through specific software (for example, *MySpace, Facebook, Ning, Orkut*, etc.). This has allowed the creation of virtual communities, which may form as a means of socialising, but which at the same time can serve as an instrument of expression and communication through the discussion of various topics, thereby including the construction of knowledge in a collaborative way.

On this basis, we proposed to develop a study to consider the extent to which virtual communities created using social web software may (or may not) contribute to the

development of informal learning environments which expand the educational spaces beyond the classroom and promote lifelong learning. We formulated the following research questions:

i) Do virtual communities on social websites enable the development of informal learning environments?
ii) How can the Orkut virtual communities organised around the thematic axis of education, training and technology be characterised?
iii) What factors affect the communication and collaborative construction of knowledge in a social network?

In order to answer these questions, a grid for the analysis of social networks was developed and validated by two experts. With this instrument, all of the virtual communities in the Orkut social network which discussed issues relating to education, training and technology were analysed. The results obtained in this analytical study identified the basic characteristics of virtual communities, their strengths and weaknesses, the factors which affect their functioning and the dynamics and the quality of the interactions established inside the virtual community. A complementary survey was conducted with the e-moderators of the communities in question.

Virtual communities

According to the relevant literature, virtual communities can function as informal spaces for collaborative learning, where, through mutual support and interaction between members, information can be transformed into knowledge. In fact, as stated by Dias (2008, p. 6), "the community is developed not only on shared interests, which corresponds to its simplest form, but also by integrating the diversity of representations, including the voices of the participants".

However, not every virtual community can be considered as a virtual learning community. To be considered as such, a virtual community must present three attributes: cognitive presence, social presence and teaching presence. *Cognitive presence* is defined as a component which allows participants from a given community to construct meanings through discussions held in that context (Garrison, Anderson, & Archer, 2000, 2004). The cognitive presence reflects the development of higher psychological processes, giving individuals the opportunity to establish relationships with other existing knowledge, acquiring higher levels of competence in terms of analysis and critical reflection. The *social presence* relates to the creation of an enabling environment so that participants feel comfortable and safe when expressing their ideas. This is crucial in a community because it prepares members to develop the ability to express their opinions and points of view and, above all, to respect the diversity of the opinions in the group. Thus, it becomes a very important support through which the cognitive presence can become effective, since it prepares people to learn collaboratively and to discuss ideas using solid arguments and within set ethical principles, thus promoting critical thinking and also learning (Garrison, Anderson, & Archer, 2000; Anderson, 2004). Finally, the *teaching presence*, which is understood to

be the provider of the components outlined above, aims to promote a space conducive to the sharing of knowledge and the construction of meaning.

The presence of these elements in a virtual community can bring about multiple forms of communication, and transform cyberspace into an infinite channel for multiple learning experiences. It must be considered that it is both challenging and motivating to belong to a group, to participate and to be recognised as an active member (Kenski, 2005). When socially integrated into the group, the individual seeks to act in accordance with its rules and, according to the author, learns about much more than the focus of his own interest. In other words, individuals learn to live as part of a group, to listen and to overcome conflicts by respecting a diverse range of opinions.

Method

This empirical study was descriptive, analytical and exploratory (Coutinho, 2005) and involved an analysis of the Orkut social networking communities which meet the following three criteria: they were online until March 29, 2009; they had a minimum of 20 members; and they addressed issues relating to the set of descriptors or keywords, education, training and technology. A database of 75 communities was considered for the content analysis process.

The choice of the Orkut social network was due to the fact that, first, it is the social network preferred by the Portuguese speaking community and, second, compared with *Facebook, MySpace, Hi5* and *Ning*, it was the social network in which a larger number of communities addressed the issues we were interested in was found.

The grid of analysis consisting of five sections (basic identification of the community, frequency of postings, tools and methods of communication, role of e-moderator and notes) was created using a literature review, and achieved a total of 43 items. The grid was subjected to a process of empirical validation of its content, and underwent several modifications in order to reach the final and definitive version which was used in the study (Lisbôa & Coutinho, 2010). The final version of the instrument to analyse the virtual communities consisted of five sections, 20 topics in a total of 43 items (Appendix).

Discussion

In order to interpret the data, we used two types of content analysis: exploratory, in the case of the communities' objectives, and categorical, for the remaining items (Ghiglione & Matalon, 1997).

The data were presented based on descriptive statistical techniques, making use of specific software for the analysis of quantitative data, namely the SPSS (*Statistical Package for Social Sciences*) for cross tabulation and data, and *Excel* in order to create graphs and tables.

Language and place of creation

In the 75 communities contained in the database, the Portuguese language (the Brazilian version) was the dominant form of communication between members (86.7%). However, we found that 12% of the communities used the English language and 1% used Spanish. Regarding the place of creation, or the 'headquarters', of the communities in question, Brazil was the most common location with 86.7% of the total number of communities, followed by India with 9.3% and the U.S. with only 1.3%.

Types of community

Of the 75 communities studied, 20 were moderated and 55 were public, (26.7% and 73.3% respectively).

Objectives of the community

In terms of the six categories considered in the analysis of this item, in the 75 communities which formed the database, *Application of ICT in an educational context* prevailed over all of the other targets with 41.3%, followed by the category *Dissemination of Web 2.0 tools* with 14.7%, *Is Orkut a competitor to the school?* and *Teacher training*, both with 13.3%, and, finally, *Other*, with 6.7%.

Turning to an analysis of the variables resulting from the crossing of the variables *objectives* and *type of community*, we obtained the results shown in Table 1.

Table 1: Distribution of targets according to the type of community

Communities' objectives	Moderated N = 20		Public N = 55	
	f	%*	f	%*
Dissemination of Web 2.0 tools	2	10	9	16.4
Application of ICT in an educational context	12	60	19	34.5
Is Orkut a competitor to the school?	0	-	10	18.2
Social networking and virtual communities on the Internet	2	10	6	10.9
Teacher training	3	15	7	12.7
Other	1	5	4	7.3

* % inside the community type.

We found that in moderated communities, 60% of the communities had the objective of the *Application of ICT in an educational context*, followed by *Teacher training* with 15%, *Dissemination of Web 2.0 tools* and *Social networks & virtual communities on the Internet*, both with 10%, and finally, with 5%, the *Other* category.

In contrast, in public communities, the most salient target in 34.5% of these communities was the *Application of ICT in an educational setting* followed by *Orkut rival school?* with 18.2%, *Dissemination of Web 2.0 tools* with 16.4%, *Teacher*

training with 12.7% and *Social networking and virtual communities on the Internet* with 10.9%.

Data analysis revealed qualitative differences in the objectives pursued in moderated communities when compared with public communities; in fact, it is in terms of moderated communities that we can analyse and discuss further the issues related to themes which are more directly related to the teaching and learning process. In public communities, these aspects have a low relative weighting, and are replaced by topics that are more general and related to concerns regarding the school.

Issues addressed

Regarding this item, and considering the 75 new communities as a whole, we found that the issue *Web applications* represented 13.7% of the total issues addressed, followed by *Software and programs* and *Reporting and exchange of experiences*, both with 24 occurrences, which corresponds to 11.7% of the total. As for the issues which were least frequently discussed on forums, *Videos* only occupied 2% of the total.

If we now consider the distribution of the subjects addressed according to the type of community (public versus moderated), the results appear as presented in Table 2.

Table 2: Distribution of subjects according to types of community

Issues addressed	Type of community			
	Moderated (N = 20)		Public (N = 55)	
	f	%	f	%
Software and programs	8	40	16	29
Web applications	9	45	19	35
Reporting and exchange of experiences	13	65	11	20
Readings	5	25	5	9
Uses in educational setting	11	55	8	15
Advertising and publicity	5	25	8	15
Videos	3	15	1	2
News	5	25	8	15
Interesting links	6	30	9	16
Advertising products services	6	30	7	13
Events	11	55	8	15
Other	12	60	11	20

The analysis in this table shows interesting findings which we will discuss briefly. If we consider that the number of moderated communities was 20 and the number of public communities was 55, we soon see that, with respect to the matters in question, the moderated communities are much more fertile, rich and dynamic, judging by both the diversity and the number of topics considered for discussion in the community forums.

In fact, although the number of moderated communities is less than a third of the number of public ones, there are issues for which the number times they are discussed in moderated forums, in absolute simple values, clearly surpasses the number of times they are discussed in public forums; we are referring to the topics *Reports and exchange of experiences*, *Use of applications in an educational context*, *Videos*, *Announcements of events* and *Others*. The first two topics are clearly related to the discussion of issues related to educational practice, as well as the application and sharing of knowledge in different contexts of formal or informal education.

The different themes that prevail in the spaces of public discussion in the community: *Web application* and *Software and programs*, *Experience report*, *Propaganda or advertising*, *News*, *Links of interest* and also *Product advertisement and services*. By the nature of the matters discussed, it is clear that members of the public communities are more interested in technological innovations than in the possibility of collaborative knowledge building for themselves and for the community in a logic of communal constructivism (Holmes, Tangney, Fitzgibbon, Savage & Mehan, 2001). These are matters where the educational and training component is unclear and not always present, which leads us to believe that, as Garrisson, Anderson and Archer (2000) defend, we are not in the presence of learning communities, but simple virtual communities. In fact, the themes addressed in these communities do not predict that the target that moves its members is the construction of knowledge as a result of interactions and reflections of the group. These communities appear to be devoid of social presence, cognitive presence and teaching presence.

Communication tools

Communication tools of social networks are spaces which allow people to add to the discussion the most varied topics. In Orkut social network the communication tools available for communication within virtual communities are the forums and surveys. It was on these two features that we analysed 75 communities which formed the basis of the documentary data.

It was thus possible to verify that the forum is the tool used by 69.3% of the 75 communities that were studied. However, the survey is only used in 30.76% of the communities.

When we examined the use of these tools depending on the type of community we found that both tools were being more used in moderated communities than in public (not moderated). In fact, all moderated communities use the forums and 60% use surveys. In public communities, only 78% use the forums and a mere 29% use the survey.

We conclude therefore that the most used communication tool is the forum. However, there are a few public communities which do not use this communication tool, which is a fact that has not ceased to amaze.

In moderated communities the forum is the tool that assumes greater expression as a vehicle for communication within the community. This finding reinforces the importance of the e-moderator in fostering a virtual community. As to survey tools, we observed that the subjects covered in the surveys translated, most often, questions asked by the e-moderator in order to obtain information about the profile of members and their professional experiences, and seek views on current issues with direct relation on the subjects addressed in the forums.

There were 2192 topics in the forums and 5731 posts in the 75 communities analysed.

Forms of communication

In our study we verified that the communication established *between the members* was the form of communication prevalent in both types of communities (moderated and public) (76.92%).

Turning to an analysis according to the types of community, we found that in moderated communities, 65% of communication is *established between the members* while in public communities, this form of communication was present in only 31% of the communities.

If we consider that there are less than a third of moderated communities in comparison to public communities, we can say that, in relative terms, they have a much greater level of interaction among their members, being decentralised networks for the purpose of sharing information, in which communication is not made in a linear manner. In fact, although an e-moderator is present, as recommended by Franco (2008), this does not mean that the communities have hierarchical structures. The number of connections between members allows ideas to flow in a natural, flexible and democratic manner, ensuring that there is no impediment in the process of communication if there are any problems regarding connection between the e-moderator and one of the members. This is because the more points are related to each other, the denser the community will become, as the established existence of a source or an intermediate point of communication between participants is not of fundamental importance (Costa, Junqueira, Martinho & Fecuri, 2003).

Type of language used

Overall, in the 75 communities in this study, accommodated language was the most commonly form used, being employed in 55.95% of cases, followed by collaborative language with 23.81%, which somewhat contradicts the literature, which suggests that the construction of knowledge in virtual communities is the result of a shared process in which interaction and collaboration are of fundamental importance.

However, when we move to an analysis involving the type of community involved, these results change. We observed that in 55% of the moderated communities, collaborative language was predominantly used, and reflective and critical language

was used in 45% of cases. In contrast, in public communities, the accommodated language is predominantly used as recorded in Table 3.

Table 3: Type of language (moderated versus public communities)

Type of language	Moderated (N = 20)		Public (N = 55)	
	f	%	f	%
Reflective and critical	9	45	8	15
Collaborative	11	55	9	16
Accommodated	8	40	39	73

Given this result, we can understand that communication is established in public communities, generally speaking, in a unidirectional way, not contributing, thus, to the construction of meaning and the development of higher psychological processes (Jonassen, 2007).

It appears that, in these communities, there is no activity planning and no intellectual and technical support with which to sustain further discussion. This may be explained by the activity theory, because, according to Asbahr (2005), the need to participate and interact within the group is directly connected to an objective, ie, to a reason. According to Asbahr, "The reason is that it drives us to develop an activity" precisely by articulating "a need for an object". "Objects and needs alone do not produce activities; the activity only exists if there is a reason" (2005 p. 110)

The e-moderator's role

The analysis above directed us towards the important function of the e-moderator within a virtual community. This section focusses specifically on the role and function of members in a virtual community.

As mentioned in the literature review, the e-moderator must know the needs of the individual members and diversify the topics to be discussed within the community, so that the discussions are not restricted to a small number of participants. In addition, she or he must responsibly manage any conflicts within the virtual space, helping each member in building his or her own identity (Kato & Damião, 2006).

Before presenting the data, we would like to emphasise that we decided to include public communities in this analysis for two reasons: i) although some communities call themselves public, ie, they do not have an official e-moderator, this function was often exercised by some members of the community who took care of the organisation and management of the virtual space, and ii) to include all communities in a global analysis of this subject and to proceed with a comparative approach in order to better understand the role and function of a moderated community.

As noted in the Methodology section, eight categories were considered in the operationalisation of this item in the analysis grid, and the results were recorded for

each moderated or public community, including the various roles and functions performed by the e-moderator (see Table 4).

Table 4: Relationship between the role of the e-moderator and the type of community

E-moderator's role	Moderated (N = 20)		Public (N = 55)	
	f	%	f	%
Promotes the involvement of participants	7	35	6	11
Favours the construction of meaning and knowledge	4	20	3	5
Assumes an active and dynamic role in the organisation of the community	6	30	3	5
Encourages reflective practices	5	25	4	7
Implements discursive activities (peer) and analyses the contents	3	15	4	7
Leads the discussions within the online group in a shared way	3	15	2	4
Assumes the role of facilitator of learning tasks and experiences	4	20	2	4
Promotes the autonomy of the group members	8	40	6	11

As expected, moderated communities performed better in terms of the function of the e-moderator in all categories when compared with public communities. In terms of expressiveness, we included the categories *Promotes the autonomy of the group members*, which was present in 40% of the moderated communities, followed by *Promotes the involvement of participants* and *Takes an active and dynamic role in the organisation of the community*, which were represented, in moderated communities by 35% and 30% respectively.

However, we must comment on the data provided in the table. We expected that the differences would be more pronounced, in other words, that some functions of the e-moderator to be more evident in moderated communities. In fact, in terms of some of the items considered for analysis, it appeared that the e-moderator did not play his or her role satisfactorily, thus not allowing the community to be a rich space for knowledge sharing and collaboration. This applies, for example, to the items *Favours the construction of meaning and knowledge*, which was only present in 20% of moderated communities, and *Encourages reflective practices* which was present in only 25% of cases. More serious still is the fact that the functions *Implements discursive activities (peer) and analyses the contents* and *Leads the discussions within the online group in a shared manner* were only reported in 15% i.e. three of 20 of the moderated communities considered in this analysis.

This data must be registered as the literature shows that one of the attributes of e-moderators is to create strategies to address the exchange of information. For this purpose, it is important that the e-moderator examines the content of discussions in the forum and provides feedback. Only by doing this can the e-moderator help the group to

build up knowledge collaboratively and to apply it in other contexts in their lives, as Salmon (2000) notes.

Phases of the development of the community

When considering the developmental phases of the 75 communities analysed, we found that the categories which stood out were *The group is autonomous* and *There is sharing of information*, which were relevant in 15.86% and 15.17% of cases respectively. Regarding a comparative analysis on the basis of types of community (moderated versus public), the results are shown in Table 5.

Table 5: The relationship between phases of development activities
and types of community

The progression of activities in the community	Moderated (N = 20)		Public (N= 55)	
	f	%	f	%
The issues are challenging	9	45	4	7
There is sharing of information	11	55	11	20
Mediation is collaborative	11	55	6	11
The group is autonomous	9	45	14	25

Once again, the figure of the e-moderator emerges as the key element in making a difference, although, as in the previous section, we expected the data to be more conclusive in the case of moderated communities. In fact, *There is sharing of information* and *Mediation is collaborative* were only relevant in 55% of moderated communities, and *The issues are challenging* and *The group is autonomous* in 45% of cases. This means that only half of the moderated communities showed evidence that the e-moderator, as predicted by Salmon (2000) and Barbera (2001), is the element responsible for managing an environment which then develops through different stages: preparation, stimulation of the group and creation of challenging strategies in order to enable members to participate and interact with each other. It is the practice of shared leadership that group members will be allowed to exercise their autonomy in the discussions and propose new topics to be discussed.

A closer reading of the data leads us to conclude that, although there are qualitative differences between moderated and public communities, these differences are still rather small, and we can conclude that, in the communities studied, there is a climate which is moderately conducive to the members' autonomy and which enables them to manage their own learning process in the future.

Conclusion

This analysis of the 75 communities considered in the present study highlighted the following interesting issues related to the characteristics of virtual communities: (i) most communities are public, and (ii) there are substantial differences when we compare public and moderated communities. In fact, we verified that in moderated communities, the objectives pursued by the members are more focussed on the

question of teaching and learning than in public communities. In addition, the themes that are addressed are more varied and are dealt with in more depth in moderated communities than in public communities. In the latter, there is a clear issue regarding the disclosure of the personal profiles of members, as well regarding advertising that is not directly related to the central theme on which the community is based.

As regards styles of communication, we found that communication between the members clearly prevails over communication between members and the e-moderator in all of the communities studied. This confirms what the literature tells us about this subject, namely that the e-moderator should not assume a central role.

Regarding the type of language used, the data obtained are curious. In terms of the 75 communities, we found that the dominant mode of communication is accommodated language (47%) followed at a distance by collaborative language (25%) and critical language (17%). However, when we move to an analysis according to types of community, we found that the scenario changed completely: collaborative language is used in the majority of moderated communities (55%), closely followed by reflexive and critical language (45%); however, in public communities, accommodated language prevails (73%). This last finding seems to be inconsistent with what the literature tells us about the political use of Web 2.0 applications, which advocate that we stop being mere consumers of information and become constructers of knowledge through participation, in which the kind of language used is of particular importance. In this study, critical and reflective language was present in less than half of the moderated communities. This fact deserves reflection because it highlights the need for greater awareness by the e-moderator and the role he or she can play so that the construction of knowledge in the community can be the result of critical thinking and contributions of members who, imbued with a common goal, work together collaboratively. The data obtained in our study show that the first steps have been taken and that we are on the right path, but we must go further in the sense that accommodated language, even if it is present, is practically imperceptible.

The remaining research questions were more closely related to the role and functions of the e-moderator in the communities studied. In fact, we noticed, as we advanced through the data analysis, that the e-moderator was the main actor responsible for the mediation of the process of interaction and knowledge sharing.

In addition, it was also verified that the quality of the topics discussed assumed a very important nature which influences and determines the participation and retention of members in a community. In this sense, the e-moderator emerges as the key element in fostering virtual communities, yet it was perceived that e-moderators may not have a full awareness of the importance of his or her role, often assuming a more administrative than pedagogical function.

Regarding the main objective of this study - to discern whether these environments can be set up as informal spaces for learning - the answer is not yet conclusive, although we found strong evidence in the analysis to imply that these environments can be used

in the process of the professional development of teachers and trainers, which infers that collaboration and knowledge sharing can be used as cognitive and social tools.

In short, future developments will require a greater commitment, not only from the e-moderators in order that they may wisely lead the discussions in the community, but also from members, who should use these spaces in a more conscientious way, aiming towards concrete and well defined goals because only then will these environments become informal spaces for learning. As Ally (2004) has stressed, this requires that each member is "able to interact within their context to personalize information and construct meaning of their own" (Ally, 2004).

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Appendix: Analysis grid of social networks (Virtual communities)

This is contained in a separate file at http://www.iier.org.au/iier21/lisboa-appendix.html

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